

PCN10

THE COST-EFFECTIVENESS OF POST-OPERATIVE RADIOTHERAPY AFTER BREAST CONSERVATION SURGERY IN STAGEI-II BREAST CANCER IN SWEDEN

Persson U¹, Borg S¹, Ferras-Nunes J², Franzen S³, Genell A⁴, Malmström P⁵, Wallgren A², Östlund A⁶, Alvegård T⁵

¹IHE, The Swedish Institute for Health Economics, Lund, Sweden;

²Gothenburg University, Gothenburg, Sweden; ³West Health Care Region, Gothenburg, Sweden; ⁴Onkologiskt centrum, Sahlgrenska Universitetssjukhuset, Gothenburg, Sweden; ⁵Lund University Hospital, Lund, Sweden; ⁶West Health Care Region, Gothenburg, Borås, Sweden

OBJECTIVES: To analyse the cost-effectiveness of adding adjuvant postoperative radiotherapy (RT) to medical therapy after breast conservation surgery in Stages I–II breast cancer in Sweden. **METHODS:** A stochastic decision analytic model follows patients from primary breast conservation therapy during adjuvant therapy and includes five possible events of local or regional events, metastases and death. Clinical data were taken from a randomised clinical trial (SweBCG 91-RT) including 1187 women aged 75 or younger who had received breast conservation surgery and axillary dissection in Sweden between 1991 and 1997 and with a median follow-up of five years. Data on health care costs were taken from a breast cancer register, a health care database including all hospital and primary care contacts in the West Health care Region. Costs for pharmaceuticals, hospice, homecare and values of utilities were taken from the literature. **RESULTS:** Model results show a ten years risk of local and regional event of 24.1 and 8.4 percent for the no RT and RT groups, respectively. There was a significant increase in average Quality Adjusted Life Years (QALYs) of 0.13 (from 7.60 to 7.73) but no significant difference in average life expectancy. Treatment costs increased from SEK97,467 (€10,800) to SEK101,453 (€11,300) per patient. RT shows an incremental cost per QALY of SEK 32,000 (€3600). Model applications for 15 and 20 years results in cost savings due to a larger amount of prevented relapses. Considering RT as an add-on to novel adjuvant medical treatments regimens will however, reduce the incremental benefit of radiotherapy and the subsequent cost offsets. **CONCLUSIONS:** Postoperative RT is cost-effective for pre- and postmenopausal breast cancer women with Stage I–II undergoing breast conservation therapy in Sweden only as an adjunct to no medical adjuvant treatment. As an adjunct to novel adjuvant medical therapies, RT is cost-effective in high-risk groups.

PCN11

ECONOMIC EVALUATION OF BORTEZOMIB IN THE TREATMENT OF RELAPSED AND REFRACTORY MULTIPLE MYELOMA PATIENTS IN CANADA

Yoong K¹, Bagust A², Haycox AR², Mujica-Mota R², Dhawan R³

¹Janssen-Ortho Inc, Toronto, Ontario, Canada; ²University of Liverpool, Liverpool, UK; ³Johnson & Johnson Pharmaceutical Services LLC, Raritan, NJ, USA

OBJECTIVES: In 2005, bortezomib received regulatory approval in Canada for the treatment of multiple myeloma (MM) patients who have relapsed following front-line therapy and are refractory to their most recent therapy. Prior to this approval, treatment options for this patient group were very limited and included best supportive care (BSC). The objective was to conduct an economic analysis of bortezomib versus BSC in relapsed and refractory MM patients. **METHODS:** The clinical evidence (survival and QOL) for the analysis was taken from the SUMMIT trial (NEJM 2003;384:2609–2617), a Phase II trial

of bortezomib in 202 relapsed and refractory MM patients. These patients were heavily pre-treated with a median of six prior lines of therapy. In order to properly represent such a refractory group of patients, the Progressive Disease subgroup of patients in SUMMIT were used to estimate how a BSC group would perform. Utility score was indirectly obtained from mapping patient QOL (EORTC-QLQC30, MY24, FACIT-Fatigue, FACT/GOG-Ntx) onto dimensions in ED-5D. Resource use from SUMMIT was used to estimate costs from the Ontario Ministry of Health perspective. **RESULTS:** Bortezomib produced a survival gain of 9.95 months (range 7.75 to 12.09 months), a QALY gain of 0.53 QALY, and an incremental cost of CAN\$37,662 per patient. The incremental cost-effectiveness ratio (ICER) was CAN\$45,399 (range \$37,380 to \$58,288) per LY and incremental cost-utility ratio (ICUR) was CAN\$70,852 (range \$58,189 to \$89,791) per QALY. Sensitivity analyses did not produce wide changes in the ICER or ICUR. **CONCLUSIONS:** Bortezomib is a cost-effective option for this patient population that has limited available therapies.

PCN12

IMPACT OF ADJUVANT CHEMOTHERAPY WITH DOCETAXEL FOR EARLY BREAST CANCER: COST-EFFECTIVENESS ANALYSIS (CEA) OF A DOCETAXEL, DOXORUBICIN AND CYCLOPHOSPHAMIDE REGIMEN (TAC) VERSUS 5-FLUOROURACIL, DOXORUBICIN AND CYCLOPHOSPHAMIDE (FAC) IN FRANCE

Miadi-Fargier H¹, Le Pen C¹, Woronoff-Lemsi MC², Guastalla JP³, Pivrot X², Roché H⁴, Pinguet F⁵, Favier B³, Gligorov J⁶, Debrix I⁶, Spielmann M⁷, Antoine EC⁸, Cadilhac M⁹, De Pourville GA¹⁰

¹AREMIS Consultants, Neuilly-sur-Seine, France; ²CHU de Besançon—Hôpital Jean Minjoz, Besançon, France; ³Centre Léon Bérard, Lyon, France; ⁴Institut Claudius Regaud, Toulouse, France; ⁵CRLC Val d'Aurelle, Montpellier, France; ⁶Hôpital Tenon, Paris, France; ⁷Institut Gustave Roussy, Villejuif, France; ⁸Clinique Hartman, Neuilly-sur-Seine, France; ⁹Sanofi-Aventis, Paris, France; ¹⁰INSERM, Le Kremlin Bicêtre, France

OBJECTIVES: A drug protocol that incorporated docetaxel with the conventional anticancer agents doxorubicin and cyclophosphamide (TAC) has shown better efficacy than 5-FU with the same agents (FAC) in terms of disease-free survival and overall survival, in a long term (5 year) randomised controlled trial in women with early breast cancer (BCIRG001 trial). Considering the cost difference between the two regimens and the potentially large number of patients affected by this new indication, an economic assessment was deemed necessary. **METHODS:** In order to assess long term costs and effectiveness of both regimens beyond the time scope of the trial, we developed a lifetime Markov model comparing TAC and FAC. Four health states were defined: alive without relapse, alive with loco-regional relapse, alive with distant relapse and dead. Transitions occurred every 6 months accordingly to time dependent transition probabilities derived from the clinical trial. Model consistency was checked against the 5-year trial results. We took into account costs of initial chemotherapy, of severe (grade 3/4) adverse events (febrile neutropenia, stomatitis, diarrhoea, infection), of secondary prophylaxis with growth factors and of follow-up after treatment. In case of relapse, a cost was assigned to patients including pre-treatment check-up, chemotherapy, supportive care and follow-up. The perspective was that of the French public health insurance. **RESULTS:** Patients receiving TAC had a longer life expectancy than those treated with FAC (28.61 versus 26.33 years). Overall lifetime average costs were €20,837 and €16,143 respectively for TAC and FAC. The incremental

cost-effectiveness ratio (ICER) was €2059 in the base case, varying from €1474 to €4963 according to the multi-ways sensitivity analysis. **CONCLUSIONS:** The economic assessment shows that TAC is cost-effective in the management of early breast cancer in France with an ICER below the threshold commonly cited in such analyses.

PCN13

COST-EFFECTIVENESS OF HEPATIC ARTERY INFUSION FOR METASTATIC COLORECTAL CANCER (CALGB 9481)

Weeks JC¹, Romanus D¹, Herndon II JE², Schrag D³, Mayer RJ¹, Kemeny N³

¹Dana-Farber Cancer Institute, Boston, MA, USA; ²CALGB Statistical Center, Durham, NC, USA; ³Memorial Sloan-Kettering Cancer Center, New York, NY, USA

OBJECTIVES: CALGB conducted a randomized trial to compare the survival duration, quality of life, and costs of hepatic artery infusion (HAI) versus systemic chemotherapy (SYS) as initial treatment for patients with colorectal cancer metastatic to the liver. We evaluated the lifetime incremental cost and benefit from a third-party payer perspective alongside that trial. **METHODS:** Resource use data were collected for all study patients through 18 months, regardless of disease progression, and a subset was followed until death. Unit costs were derived from itemized patient bills, adjusted using department-specific ratios of costs to charges. Utility weights were collected serially from trial patients and used to calculate quality-adjusted survival. **RESULTS:** During the first 18 months, inpatient stays accounted for the highest proportion of overall costs (47%) in the HAI arm, while outpatient visits were the major component of costs (40%) in the SYS arm. In both arms, non-protocol chemotherapy treatment given after progression accounted for approximately half of all outpatient care costs. Compared to systemic 5-fluorouracil and leucovorin, hepatic artery infusion of floxuridine increased quality-adjusted survival by 0.46 quality-adjusted life years, at an incremental cost of \$50,867. Most of the difference in costs occurred early, and was attributable to higher inpatient care and surgery costs. The incremental cost-effectiveness ratio (ICER) was \$112,924 per quality-adjusted life year. The bootstrap-derived distribution of ICER was quite precise, with only 28% and 90% of simulations falling under \$100,000/QALY and \$200,000/QALY, respectively. The magnitude of the ICER was robust in sensitivity analyses. **CONCLUSIONS:** Hepatic artery infusion for metastatic colorectal cancer resulted in a substantial increase in quality-adjusted survival at an ICER that compares favorably with other widely used cancer treatments in the United States. These results create a benchmark against which the costs and cost-effectiveness of new agents can and should be evaluated.

PCN14

COST-EFFECTIVENESS ANALYSIS OF ARANESP® (DARBEPOETIN ALFA) ADMINISTERED ONCE EVERY THREE WEEKS COMPARED TO ONCE EVERY WEEK

Demarteau N, Annemans L

IMS Health, Brussels, Belgium

OBJECTIVE: Anemia, a common complication of chemotherapy, is often treated with erythropoiesis-stimulating proteins. The objective of this study was to assess the cost-effectiveness of once every three weeks (Q3W) 500 µg Aranesp® (darbepoetin alfa) administration compared to a weekly 150 µg (QW) regimen from a French societal perspective. **METHOD:** A decision-tree model with a 16-week time horizon was developed in Excel®.

This model included the possibility to adapt darbepoetin alfa dosing based on hemoglobin (Hb) criteria reported in guidelines. The transition probabilities, the number of days with Hb ≥ 11 g/dL (effectiveness measure), and the units of blood transfused were extracted from a randomized clinical trial. Unit costs were applied to medical resources used (transfusions, darbepoetin alfa, physician visits, hospitalizations, and administration time by health care professionals) and patients' time. Literature data, validated by two French clinical experts, was used for inputs regarding resource use. Time was valued at gross hourly wage rate. Both time and medical costs were extracted from official sources (AMELI; INSEE) and adjusted to 2005 values. A 5000-replication probabilistic sensitivity analysis was performed with @RISK® using distributions for both probabilities and time. **RESULTS:** The effectiveness was similar between the two arms. Switching patients from QW to Q3W resulted in a gain of 2.3 days with Hb ≥ 11 g/dL (95% CI: -3.3; 7.6). Total costs were slightly lower for Q3W (€4616 [95% CI: 4303; 4959]) compared to QW (€4856 [95% CI: €4488; 5258]). Probabilistic sensitivity analysis revealed 68% of replications with higher effectiveness and lower costs for Q3W treatment (dominant); 11% with both higher effectiveness and costs; 4% where Q3W was dominated by QW and 17% showed both lower effectiveness and costs. **CONCLUSION:** This analysis provides probabilistic information to decision makers about the health economic impact of darbepoetin alfa Q3W. A decision in favor of Q3W is more likely to be beneficial from a health economic viewpoint.

PCN15

PHARMACOECONOMIC ANALYSIS OF EXEMESTANE VERSUS TAMOXIFEN AS ADJUVANT THERAPY FOR PATIENTS WITH EARLY-STAGE ESTROGEN RECEPTOR-POSITIVE BREAST CANCER

Gil JM¹, Lluch A², González P³, Del Castillo A³, Canorea F³, Rubio-Terrés C⁴

¹Institut Català d'Oncologia, L'Hospitalet de Llobregat, Barcelona, Spain;

²Hospital Clínico Universitario de Valencia, Valencia, Spain;

³Pfizer, Alcobendas, Madrid, Spain; ⁴HERO Consulting, Madrid, Spain

OBJECTIVE: To estimate the cost-effectiveness of adjuvant treatment with exemestane vs. tamoxifen for early-stage breast cancer after 2–3 years treatment with tamoxifen, in Spain. **METHODS:** A Markov state-transition model was performed from the National Health System perspective, and simulates the long-term outcomes over 10 and 20 years. The primary outcome was the incremental cost-effectiveness of exemestane scheme in terms of cost per quality-adjusted life year (QALY) gained. The transition probabilities between health states (disease-free survival with or without complications, local recurrence, contralateral breast cancer, systemic recurrence or dead) were derived from the Intergroup Exemestane Study (IES) trial and from secondary Spanish sources. The costs associated with chemotherapy and complications (bone fractures, vaginal bleeding, venous thromboembolism, myocardial infarction) and unit costs (€2005) were obtained from Spanish treatment guidelines and Spanish health costs databases. A literature review was conducted to derive the utility data. **RESULTS:** The average additional QALY per exemestane-treated patients were 0.200 and 0.557, for 10 and 20 years, respectively, compared with that of tamoxifen alone scheme. The additional cost per QALY gained obtained with exemestane was €70,990 and €39,170, respectively. The sensitivity analyses confirmed the robustness of the base case analysis. **CONCLUSIONS:** According to this model, adjuvant exemestane therapy after 2–3 years of tamoxifen therapy significantly improved disease-free survival as compared